

THE FEBRUARY MAGAZINES.

The February number of *Lippincott's Magazine* has the following table of contents:—
 "The Vicar of Hallowston," a novel, part viii, by Anthony Trollope; "The Bird," a poem, by Sara J. Smith; "The Penn Family," by John Jay Smith; "Hatch Making," by J. W. Watson; "The Elderly Colors," by Mrs. Lucy Hamilton Moser; "The Two Flags," a poem, by Edward Kennedy; "High Life, or Sketches in Switzerland," by Miss Caroline A. Burgh; "The Freedman and His Future," part ii, by George Fitzhugh; "Beyond the Breakers," a novel, concluded, by Hon. Robert Dale Owen; "Our Geographical Spellers," by W. W. Crane; "An Extraordinary Episode," by R. L. Lewis; "The Report of the Special Commissioner," "Edwin M. Stanton, Secret History of Lincoln's Cabinet," "Our Monthly Gossip," "Literature of the Day."

From the paper on "Match-making" we make these extracts:—

We all—premiering, of course, that every body is as old as ourselves—well remember the time when Bridget was dependent for the production of fire by which to warm her household duties a contrivance that was but one remove from the savage plan of rubbing two bits of wood together. We all remember the tinder-box and its accompaniments of flint and steel—an article now supposed to be so much a thing of the past that we should almost as soon expect to see a bean of the days of Charlemagne promenading Broadway; and yet we can assert that with our own eyes have we seen within the year, in Central Virginia, a spot where the tinder-box is not yet extinguished, and where lucifers are looked on as a diabolical invention.

Strictly speaking, we may say that the first birth of the lucifer was intimately in relation to the tinder-box, and they were used by Bridget, after having scraped her knuckles with the flint and steel to deposit a spark in the cotton-rag tinder, that she might elucidate a flame. These matches were simply a shaving taken from a slip of pine wood, the action of the plane causing them to curl, and either end dipped in melted sulphur. In almost every country domestic establishment these useful articles were made at home, but in the city boys and girls traversed the streets, and the prime article could be bought at two or three bunches for a penny, according to the state of the market.

The advance from the tinder-box to the first birth of the lucifer was quite equal to McClellan's advance on the Peninsula. Every chemist who undertook the matter based it upon phosphorus. At first it came in the shape of a bit of the plain article rubbed on sandpaper, the friction causing it to ignite and the application of a sulphur match producing the flame. Burnt fingers and the expense caused inventors to look further, and the next step was a small wax taper, the wick of which was coated with phosphorus, and the whole enclosed in a small glass tube. When a light was wanted the end of the tube was broken off, and the contact of the air with the ignited bit. Highly scientific, but expensive!

The next was the phosphorus-bottle. A small bit of phosphorus was put in a bottle and slightly burned with a heated wire, the bottle being quickly closed with a cork; the result was a phosphoric oxide, which, when a light was wanted, it was only necessary to bring into contact with a sulphur match. For many years these bottles were supposed to be the ultimatum of light-producing, until the German chemists went into the matter.

The first attempt at serious change was that of one Honberg, who thought he could substitute a calcined mixture of sugar, flour, and alum, which had the quality of taking fire when exposed to the air. But as people would not be content with Honberg's method, though not more practical, were tried. The best of these was a glass reservoir, holding a small supply of hydrogen gas, a column of water supported by a valve, an electric phosphorus, by aid of which an electric spark was made to ignite a small stream of hydrogen, which was released from the reservoir by pressing the finger upon a valve lever on the top.

The next point was in pneumatics, and the construction of a hard metal syringe, at the end of which was a bit of tinder, or, as the boys call it, punk. The quick pressing down of the piston condensed the air in the tube, thereby producing sufficient heat to ignite the punk, and by the application of a sulphur match the requisite flame was obtained.

But all this would not do, and at last the chemists hit upon the idea that a mixture of chlorate of potash, sugar and gum would take fire if touched by sulphuric acid. With that the bottle came up again, and oblong paper boxes were made containing a bunch of matches tipped with the chlorate, and little bottles of the acid to dip in. These boxes were safe, and as they were prettily got up, the wood of the matches being often perfumed, they held sway for many years.

But at last the public and the match-makers came to the conclusion that cheapness must be reached, and that it could be done in no other way than by discarding fancy boxes, bottles, and perfumes, and that the match must be made to ignite by friction alone. To reach this, various inventions were made, and we stepped as it were at once into the lucifer—or, as it was once called, the loco-foco—match. In the production of this essential little article almost every manufacturer undertakes to make a secret of the compound with which he tips his bit of wood, and asserts that his method is different from that of any one else; but, while we are not anxious to disclose trade secrets or lay open to an enterprising public the method of match-making, we will take the responsibility of asserting that very few of them depart far from a mixture of chlorate of potash, phosphorus, sulphur of antimony, saltpetre and starch, though they may add coloring matter they please to give their manufactures symmetry and beauty. This coloring matter is generally red ochre, red lead, Prussian blue or small, and has nothing whatever to do with the action of the match.

For a long time after the invention of the lucifer, Yankee ingenuity did not seem to grasp the idea of its manufacture in this country. We looked to Germany for our supplies, and even to the present day we import largely, while a great part of our home manufacture is in the hands of the natives of that practically scientific land. Before going farther in describing our own processes, we will, as the point has been broached, say something about German and English match-making, to show how rapidly the business has grown into a trade of importance.

The German match trade began at Darmstadt in the year 1834, and that duchy has now about thirty-five large manufactories, turning out over two millions of boxes weekly. These boxes are not like ours, which contain one hundred matches each,

but are cassettes, sometimes paper and sometimes tin, with a filling of from one thousand to fifteen hundred matches. These are sold on the spot, by the manufacturer, at about two cents, our money per dozen boxes, while the splints, untipped, of which large quantities are exported to England and other countries, are sold at a still more astonishingly low rate, one manufacturer offering the untipped at the rate of ten thousand for one cent. In Austria and Bavaria both the finished matches and the splints are sold by the pound, at a rate that makes them come equally low.

From Germany the manufacture spread into other countries, and England especially took up the making with a vigor that has made her a serious rival to the former in the markets of the world. In England, at this time, there are some most extensive manufactories—one in Lancashire alone employing five hundred hands, keeping always on hand a stock of timber valued at seventy-five thousand dollars, using every week a ton and a half of sulphur and the same quantity of glue, and producing an average of seventy millions of matches weekly.

In this country the manufacture is scattered through too many hands to compute the number made. We have no manufacturing factories that can compete in size with those of Europe; and since the internal revenue tax of one cent per box has been added to the price, the makers are unanimous in assuring us that the demand has fallen off one-half. This must of course proceed from the simple fact that the consumer has now to pay two and a half cents for what a few years ago he obtained for one cent, or less, and, as a consequence, is more careful in the use, or, rather, more judicious in the waste.

The first process to which we shall introduce you is that of the conversion of the timber. The planks or pieces, you will perceive, from which all matches save monumental and sporting ones are made, are four feet in length. This timber is not necessarily the best stuff, as it had to be years ago, when the machines were fine knives for splitting—common wood doing just as well when perfectly free of knots. These slips of plank, four feet in length and two inches in thickness, are taken to a machine to be cut into slabs the exact thickness of a match. Formerly, fine circular saws were used to accomplish this work, but have been rejected in favor of the present machine, which splits off the slabs by a motion similar to the eccentric of a steam engine, or a pushing stroke. This is a saving of forty per cent. in timber, there being no waste by sawdust.

This slab when cut off is ready for the machine that is to cut it into splints. The action of this is simply the revolution of a solid iron cylinder, about three inches in diameter, on which is a series of minute knives exactly distant the width of a match, and making eighteen upon the cylinder. The slab is passed in beneath this cylinder and the small platform that supports and presses it upward, and in seven and a half seconds is passed through, cut half its thickness. It is instantly reversed and the operation repeated; and in fifteen seconds eighteen splints four feet in length, and capable of making twenty-four matches each, or four hundred and thirty-two in all, are turned out. The same rate of progress for a day's work of ten hours would give one million thirty-six thousand eight hundred matches. Both round and square splints are made upon the same machine, the only difference being in the knives that do the cutting.

These splints, when cut, are put in bundles of fourteen hundred each, and, when not made by the match-makers, are sold to them at the rate of twenty-five cents a gross of one hundred and fifty splints, or thirty-four hundred and fifty-six matches, which, counting one hundred to the box—that being honest measure—will make thirty-four and a half boxes, or, in other words, less than a quarter of a gross of boxes of matches. To dispose of the splint-cutting, we have only to say that the cutters assert that before many months are gone they will have a machine in operation that will cut a thousand gross of splints a day, or three and a half millions of matches.

The splints being now transferred to the factory, the first process is to reduce the four feet to shorter lengths. This is done by cutting them to four inches, or twice the length of a match, this length being kept for the purpose of dipping both ends by one process. This cutting is done without unbundling, and with one movement of a guillotine worked with a treadle, the cut matches falling loosely into a box.

From this cutter they go to the hands of the tiny creatures who fit them into frames for dipping—children scarce old enough to reach the low tables at which they work, standing through their ten hours, and placing the little morsels of wood rapidly in these frames, which are simply two uprights secured firmly by a cross-piece at the bottom, and having grooved slides which hold the matches firmly just far enough apart to keep them from touching, and their ends protruding on either side of the frame. Each of these frames will hold about three thousand matches, and upon being filled they are carried to an inspector, who shakes out whatever is loose, fastens the frame and passes it over to the dipper.

The dippers are the chief workmen of the occasion, each dipping furnace accommodating two of them. The furnaces are kept at a high heat, and upon them stand, first, an iron plate with nothing upon it; second, a pan or sulphur, kept always in a fluid condition; and third, another iron plate on which is the phosphoric composition that produces the light. This composition is kept ready of the consistency of thick cream, and just before it is allowed on the plate that it may not overflow, and be of the exact depth necessary for dipping, or about the eightieth of an inch. The dipper takes the frame as it comes to his hand, putting it for a second or two upon the first hot plate, and instantly reversing it. This is done that any lingering moisture that may be in the wood shall be dried out. This done, by one dextrous movement, keeping it exactly even, it is dipped in the sulphur, which hardens immediately—reversed as before, and then instantly, in the phosphoric composition, and the illuminating process is finished. The frame goes on to a rack for drying, and in about two hours, unless the weather is very heavy and damp, the matches are ready to be taken out.

This is done by another set of hands, who, in liberating them from the frame, put them in boxes laid regularly, and they are ready to be transported to the packing-room. Here another series of hands takes them in charge—girls of a larger growth, who sometimes, in manipulating the matches and boxes, show a wonderful dexterity. One whom we watched took up the loose matches—it being understood that they are yet double, or dipped at both ends—cut them into two by means of a treadle-cutting fitted to her work-bench, and put them into their boxes, putting on the lids at the rate of four hundred boxes an hour! In taking up these matches, such

was the accuracy of touch, by practice, that she never took more nor less than exactly the number that filled the box, the filling not leaving an interstice to insert even one more match.

Being boxed, the next process is packing; previous to which we will only mention that in most factories they cut their own paper for boxes, which are afterwards given out to make at the rate of about three cents a gross compensation for making. The packing simply consists in making a package of one and a half dozen boxes, or eight packages to a gross. This gross, when complete, sells for two dollars and fifty cents; from this must be deducted the internal revenue stamp of one cent per box. The boxes are retained at the rate of two and a half cents each.

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1870 SEASONED CLEAR PINE, SEASONED CLEAR PINE, CHOICE PATTERN PINE, SPANISH CEDAR, FOR PATTERNS, RED CEDAR.

1870 FLORIDA FLOORING, FLORIDA FLOORING, CAROLINA FLOORING, VIRGINIA FLOORING, DELAWARE FLOORING, ASH FLOORING, WALNUT FLOORING, FLORIDA STEP BOARDS, RAIL PLANK.

1870 WALNUT BOARDS AND PLANK, WALNUT BOARDS AND PLANK, WALNUT PLANK.

1870 UNDERTAKERS' LUMBER, UNDERTAKERS' LUMBER, RED CEDAR, WALNUT AND PINE.

1870 SEASONED POPLAR, SEASONED CHERRY, ASH.

1870 WHITE OAK PLANK AND BOARDS, HICKORY.

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CAPITAL.
 Amount authorized, fully paid up.....\$100,000.00
 Contingent fund (surplus earned).....\$5,232.89
 Actual capital.....\$105,232.89

ASSETS.

Bonds and Mortgages.....	\$74,032.96
\$100,000 U. S. 5 per cent. Bonds, 1870.....	64,100.00
12,000 do. do. do. 5 1/2, 1862 m. and n.	18,750.00
55,500 do. do. do. " 1863 m. and n.	55,710.00
74,000 do. do. do. " 1863 m. and n.	62,671.00
9,500 do. do. do. " 1863 m. and n.	10,640.00
4,200 do. do. do. " 1867 and 1868	45,577.00
1.50 do. 8 per cent. div. 10-40	1,753.00
2.50 State of Pennsylvania six per cent.	2,500.00
9,000 City of Philadelphia six per cent.	9,500.00
10,000 Philadelphia and Erie Railroad six per cent.	9,800.00
10,000 North Pennsylvania Railroad six per cent.	8,800.00
10,000 Elmira and Yates Railroad six per cent.	8,500.00
13,000 Elmira and Yates Railroad six per cent.	11,700.00
10,000 Camden and Amboy Railroad six per cent.	9,750.00
7,500 Lehigh Coal and Navigation Company six per cent.	6,250.00
300 Salem County, N. J., six per cent.	300.00
2,000 Elmira and Yates Railroad six per cent.	1,300.00
5,000 Allegheny County, Pa., five per cent.	2,380.00
5,000 Junction Railroad six per cent.	4,500.00
220 shares Central National Bank.....	28,300.00
100 shares Farmers and Merchants' National Bank.....	11,700.00
80 shares National Bank of the Republic.....	8,000.00
120 shares Lehigh Valley Railroad.....	7,500.00
20 shares Fidelity Safe Deposit Co.....	3,700.00
Sound Securities held in Trust.....	6,000.00
Loans on Collateral Security.....	400,000.00
Premium Notes secured by Real Estate.....	107,153.11
Cash on hand.....	45,183.74
Office fixtures.....	5,000.00
Cash in Bonds of Agents.....	\$1,119,317.57
Deferred Premiums.....	77,405.93
.....	86,023.00
.....	\$1,208,849.97

BUSINESS OF THE COMPANY FOR 1869.

Premiums Received.....\$311,432.63
 Interest on Premium Fund and Annuity Fund.....25,035.93

Cash in Hands of Agents and Deferred Premiums.....334,488.56
 Premiums.....89,523.00

Interest on Other Investments.....\$24,000.55
48,905.05

EXPENDITURES IN 1869.

Agents' Commissions.....\$41,033.78
 Reinsurance.....2,965.81

Expenses, printing, advertising, office rent, salaries, etc.,24,807.95
 Losses, numbering fourteen.....47,500.00
 Amount paid annuities.....1,634.91

.....\$130,035.05

908 Policies issued in 1869, insuring.....\$7,225,925.00
 2678 Outstanding 12mo. 31, 1869, insuring.....\$7,657,582.00

13 Annuities.....\$12,770.08

Total number of deaths from the origin of the Company, 31.....894,000.00

Amount owing to depositors.....\$309,272.55
 Amount owing to Trust funds.....\$75,850.28

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